



NELP

Navy Environmental Leadership Program

bulletin

Special Oil Spill Prevention Edition

Our mission

The Navy Environmental Leadership Program (NELP) was established to find new and innovative ways to manage Navy environmental programs. It includes a West Coast base at Naval Air Station (NAS) North Island, California and an East Coast base at Naval Station (NS) Mayport, Florida. Recently, the West Coast NELP responsibility has been transferred from NAS North Island to the regional level, Navy Region Southwest.

The NELP mission includes testing new technologies and management strategies, then sharing successes and lessons learned throughout the Navy and Marine Corps. NELP's ultimate goal is to preserve the environment through providing focused leadership, identifying innovative technical initiatives in all aspects of shore station environmental management, expediting compliance and cleanup, and ensuring stewardship of natural and cultural resources.

The Navy has a global response cleanup network in place for all oil spills at sea. In an effort to go beyond oil spill response, NELP has focused on oil spill prevention to eliminate preventable oil spills, thus reducing risks to human health and the environment.

Oil spill prevention remains a priority for NELP activities and all naval facilities. This NELP Bulletin focuses on oil spill prevention initiatives underway on both the East and West coasts. Navy efforts on oil spill prevention will also be discussed at the upcoming Afloat Oil Spill Prevention Workshop (see related article).

The San Diego Regional Oil Spill Working Group *Readiness through Prevention*

In its effort to maintain the Navy's proactive approach to pollution prevention, and in the spirit of community partnership, the Commander Naval Surface Forces Pacific (CNSP) teamed with the U.S. Coast Guard (USCG) to examine oil spill prevention in San Diego Bay. The 1996 study, called Prevention through People (PTP), was the first step toward mitigating local oil spills. PTP results showed that spills were caused equally by human error and equipment failure during oil transfer operations. CNSP reacted to the study, in part, by drafting aggressive risk management controls, geared toward reducing spills during oil

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NS Mayport NELP Co-Hosts the Afloat Oil Spill Prevention Workshop

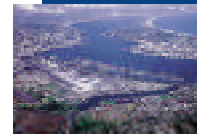
Commander-in-Chief, Atlantic Fleet (CINCLANTFLT), Commander-in-Chief, Pacific Fleet (CINCPACFLT), and Naval Station (NS) Mayport Navy Environmental Leadership Program (NELP) will host an Afloat Oil Spill Prevention Workshop (Workshop) at the Breezy Point Officers Club at NS Norfolk on August 17 to 19. Sailors from all ship classes will be invited to talk about their concerns and suggestions for prevention of oil spills. The objectives of the Workshop are to use the deckplate perspective to validate the recommendations of the CINCPACFLT and CINCLANTFLT oil spill prevention working group, identify additional issues to Chief of Naval Operations (CNO) N45 for further action.

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transfers by eliminating “topping off” and certain other standardized procedures.

Oil spill prevention efforts gained momentum in January 1997 when the San Diego Regional Water Quality Control Board (RWQCB) approached the Navy regarding its oil discharges to San Diego Bay. RWQCB stated that, “...the Navy is not doing enough to prevent spills.” Commander, Naval Base (COMNAVBASE) San Diego, Rear Admiral Veronica Froman, the regional Navy On-Scene Coordinator (NOSC) responded by forming a flag-level executive steering committee (ESC) to address ship-related pollution.

In July 1997, the ESC met to create a policy statement addressing Navy oil spills and to develop long-term spill prevention strategies. The Navy was the largest source, by volume, of oil discharge to San Diego Bay and its spill record was constant. The ESC determined that more in-depth data and consistent spill reporting and investigation were critical to resolving the issue, and it chartered the San Diego Regional Oil Spill Working Group (ROSWG) in August 1997.

ROSWG members represent all major fleet type commanders and shore support commands, including CNSP, Commander Third Fleet (C3F), Commander Naval Air Force Pacific (CNAF), Commander Amphibious Group Three (COMPHIBGRU3), Naval Sea Systems Command (NAVSEA), and Commander Navy Region Southwest (CNRSW), as well as representatives from Port Operations and the NOSC.

The working group selected the theme “Readiness through Prevention” as a constant reminder of the group’s long-term charter – to prevent pollution at its source. ROSWG also established the following goals:

- Institute a zero-tolerance policy for preventable spills
- Establish appropriate investigation and follow-up criteria
- Recommend effective long-term methods of reducing oil spills in San Diego Bay
- Share information with fleet and shore activity operations Navy wide

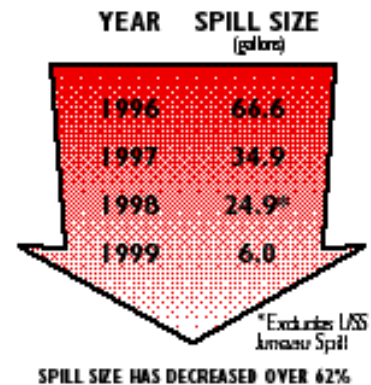
ROSWG established three subcommittees — data collection, documentation, and operations risk management — to develop and implement practical solutions to the oil spill problem. The subcommittees meet twice a month, bringing together technical, shore management, and fleet operators into functional groups that work to achieve ROSWG goals. As subcommittee initiatives are implemented, preventable spills will ultimately be eliminated. Preventable spills are those attributable to human error and those resulting from faulty materials, equipment failures, improper installation, and operations and maintenance deficiencies.

The Data Collection Subcommittee has streamlined data collection and analysis procedures to provide consistent and reliable spill tracking data. The subcommittee examines data for trends to identify risk areas that are then reviewed by the Operations Risk Management (ORM) Subcommittee. The Data Collection Subcommittee also compiles “lessons learned” that will eventually be incorporated into quarterly messages transmitted to fleet units, as appropriate. Lessons learned include information on the quantities spilled, the root causes of spills, and any common trends identified. The subcommittee is also working with the Center for Naval Analysis to quantify oil spill and oily waste management costs, as well as Navy internal fuel transfers. This analysis is important because the measurement of Navy oil spill performance (quantity spilled per quantity moved) relies on accurate reporting of this information.

ORM is leading Navy efforts to prevent oil pollution at the source. The subcommittee is scrutinizing pollution-related operation, maintenance, repair, and equipment replacement



A zero-tolerance policy has been established for preventable spills.



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The San Diego Regional Oil Spill Working Group



The San Diego ROSWG is working to prevent oil pollution at its source.

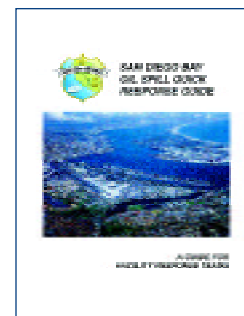
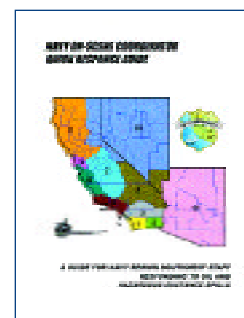
procedures for new spill prevention initiatives. Installation of new hybrid gaskets that adapt more readily to flanges and mechanical valve seals that reduce oil leakage is underway. In addition, waste stream segregation requirements have been identified as requiring modifications to clean water collection systems and improved oil/water separators (OWS). Another potential spill source, refueling by barge, has been reduced by more than 80 percent as a result of revised refueling guidance.

ORM efforts have heightened Navy spill awareness and have been instrumental in reducing spill sizes from 66.6 gallons in 1996 to 24.9 gallons in 1998 – a decrease of over 62 percent; to date, the average 1999 spill size is just 6.0 gallons. Spill size has also been reduced through improved spill reporting, as previously undocumented small spills are now reported and included in the calculation.

Another important factor in preventing and mitigating oil spills is an effective spill response capability. Considerable progress has been made in this area. Port operations were regionalized in 1997, resulting in standardized training for equipment operations, as well as the implementation of a single telephone number to call for spill reporting and response. Having just one telephone number ensures that the centralized command and control team receives the information and can alert both the response team and appropriate authorities, saving valuable time previously wasted on numerous telephone calls to various agencies. Also, better spill contingency plans for ships are being developed, and shipboard spill containment kits are being upgraded. Response team training has improved through the use of better, standardized guides that have reduced training requirements and increased preparedness.

The Documentation Subcommittee is formalizing ROSWG initiatives to ensure their long-term sustainability. Items under review include on-board engineering operations sequencing systems (OSS) procedures, fleet guides, Senior Officer Present Afloat (SOPA) Instruction, and pertinent fleet directives.

As ROSWG looks to the future, its members agree that pollution prevention must be a top Navy priority. The zero-tolerance spill policy will only be achieved through effective planning, training, procedures, maintenance, and Navy-wide guidance directives supported by adequate funding. ROSWG will continue to strive to improve the system by targeting oil pollution and preventing it at the source. ROSWG representatives will participate in the upcoming Navy-wide Oil Spill Prevention Workshop scheduled for August 17-19 at NS Norfolk.



Navy Region Southwest Response Guides

For more information about the San Diego ROSWG, contact John Owens, NOSC Program Manager at CNRSW, telephone: Commercial: (619) 532-1824; DSN: 522-1824 or Owens.John@cnrsw.navy.mil.

CD-ROMs Enhance Fueling Training

Thanks to an initiative of its Oil Spill Prevention Quality Management Board (QMB), the Navy Environmental Leadership Program (NELP) at NS Mayport will make available computer-based training (CBT) for refueling/defueling evolutions aboard the Guided Missile Frigate (FFG), Cruiser (CG) and Destroyer (DD) ship classes this summer. A prototype CBT was used on USS Carney (DDG -64), a Guided Missile Destroyer, and has been an integral part of the training program. USS Carney has reported no spills since its commissioning in 1996.

The training is designed to be used as supplemental instruction. Its purpose is to prevent spills by allowing each student to master refueling evolutions before actually performing them.

Each ship class will have a Compact Disc Read Only Memory (CD-ROM) with class-pertinent data collected from USS Taylor (FFG-50), USS O'Bannon (DD-987) and USS Vicksburg (CG-69). The training is divided into four instructional areas followed by a final test. The instructional areas include an introduction, fueling fundamentals, an overview and a procedures segment tailored to each ship class.

The introduction instructs the Sailor on using the computer tools (mouse, keyboard entries, saving lessons), navigating the course, and understanding training purpose and content. The next segment, fueling fundamentals, includes reviews of applicable laws, ship's instructions and safety issues. Students learn to identify valves and their functions, fuel sources, and the environmental impact of oil spills.



EM1 Candice Tregoning uses the refueling computer based training (CBT) aboard USS The Sullivans (DDG-68). She says it helps her understand the ship's equipment configuration and how it operates.

Students are permitted to use references during the lessons and testing as they would during actual refueling/defueling operations. These include Engineering Operating and Sequencing System (EOSS), Ship's Information Books (SIBs), ship's drawings, and the Personnel Qualification Standard (PQS) for the Oil King/Water King, NAVEDTRA 43116-5F.

NELP has begun to develop similar training for the USS John F. Kennedy (CV-67). The release date has not been established.

For more information on the CBT, contact Jan Bovier at (904) 270-6730 (DSN 960) or jbovier@nsmayport.spear.navy.mil.



NS Mayport NELP developed refueling computer based training (CBT) on CD-ROM for the CG, DD, and FFG ship classes.

The overview includes instruction on fueling stations, overflows, fuel tanks, and controls specific to each class of ship. The procedures segment reviews source data, preparation, refueling, and post-refueling procedures.

The instruction is self-paced, so training time will vary. The CBT permits students to move about freely to completed segments for reinforcement through menu choices or interrupt and return to the point where they logged-off. The final test cannot be taken until a student completes all lesson segments.

Throughout the course of the CBT the student is given evaluation measures to help determine progress. Students experiencing problems with specific concepts are encouraged to review earlier items. The lessons also offer corrective feedback so those students that incorrectly answer questions are provided the correct answer.



NS Mayport NELP used information from USS Vicksburg (CG 69) as a model for refueling computer based training (CBT) on Ticonderoga Class ships.

NS Mayport Oil Spill Prevention QMB Lessons Learned

Naval Station (NS) Mayport Navy Environmental Leadership Program (NELP) chartered an Oil Spill Prevention Quality Management Board (QMB) in 1993 to review the processes that contribute to oil spills and to recommend actions to eliminate them. The QMB focused on the most visible issue, in-port refueling. In doing so the QMB successfully identified the root causes relating to oil spills at NS Mayport and offered recommendations that are proving fruitful.

Recognizing the importance of including those people directly involved in refueling/defueling evolutions, the QMB hosted a question and answer panel discussion. Participants included every level of Refueling Team membership — overboard discharge watchstanders; fuel testers; Oil Kings; supervisors; Main Propulsion Assistants, Engineer Officers (CHENG); Internal Fuel Transfer Team members; and Clean-Up Team members. As a result, the QMB identified 31 oil spill causes, grouped them into four categories (People, Method, Machinery, and Material), and investigated them.



To assist the investigation, the QMB chartered two Process Action Teams (PAT): Refueling/Defueling Training and Refueling/Defueling Supervision.

In their initial findings, the Training PAT members learned that while formal training is available and utilized, there were concerns that the training did not sufficiently offset the effects of personnel turnover.

The Supervision PAT found the most significant reason for ineffective supervision was lack of awareness or unfamiliarity with various requirements for safe and proper fueling/defueling evolutions. The PAT also concluded that the supervisors' problems were compounded by inconsistencies in Engineering Operating and Sequencing System (EOSS) among ship classes and inconsistencies between EOSS and NavShips Technical Manual (NSTM) Chapter 541 (Ship Fuel and Fuel Systems).

With further evaluation the root causes of oil spills in the Mayport basin identified by the QMB included:

- Inadequate/insufficient training
- Haste in refueling
- Improper tank sounding
- Inadequate EOSS procedures
- Filling tanks beyond 95 percent
- Increased fuel flow rate
- Contractor error
- Tank Level Indicator (TLI) failure

Based on these findings the QMB offered three recommendations. First, develop a checklist for use by the fuel supplier, Fleet Industrial Supply Center (FISC), and the ships to support fueling at a reduced flow rate. Second, treat fueling as a major evolution and stop all major concurrent operations aboard ship. And lastly, fill tanks to 90 percent versus 95 percent when in port.

The Senior Officer Present Afloat (SOPA) and Regional Environmental Coordinator (REC) supported the second recommendation with a three-month assessment period in which ships and units desiring fuel transfers could not schedule any other significant shipboard evolution interfering with command attention. During that time the number of reportable fuel spills fell from 19 to nine. Additional

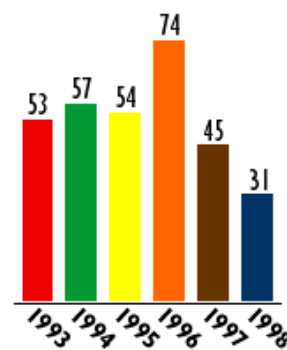
Other results of the first QMB's efforts include:

- Forwarded the recommendations involving EOSS and NSTM manuals to the Navy Region Southwest Regional Oil Spill Working Group (ROSWG) to change EOSS.
- Actions taken by Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP) to correct contractor error have proven fruitful.
- Found that TLIs were not failing, rather personnel responsible for monitoring the TLIs were not doing so correctly.

Additional results of the second QMB's efforts include:

- Avoided more than \$100,000 in costs in 1997.
- Expanded Mayport SOPA Manual discussion of in-port refueling to emphasize proper procedures.
- Proposed an After Action Report to better determine the root causes of oil spills, pending review by the legal department.
- Developed an oil spill lessons learned message system similar to the safety messages.
- Helped develop Job Qualification Requirements (JQRs) for USS DeWert (FFG-45) to forward to FFG-7 Class Immediate Superiors in Command (ISICs). Similar JQRs are being developed for the DD and CG classes.
- Expanded the CBT training to USS John F. Kennedy (CV-67) in 1999.

Number of Spills



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*USS Spruance
(DD 963)*

NS Mayport NELP Co-Hosts the Afloat Oil Spill Prevention Workshop

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Since its inception in 1993 NELP has focused on afloat oil spill prevention. It chartered two Oil Spill Prevention Quality Management Boards (QMBs) to investigate root causes of oil spills and to recommend processes to prevent them. The QMBs learned that the best source of information for causes and solutions to oil spills is sailors of every rate and rank, from overboard discharge watchstanders to Chief Engineers. NELP, CINCLANTFLT and CINCPACFLT hope to prove that lesson learned again at the Workshop.

For more information on the Workshop, contact Cheryl Mitchell at (904) 270-6730 (DSN 960) or cmitchell@nsmayport.spear.navy.mil.

NS Mayport Oil Spill Prevention QMB Lessons Learned

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review revealed the reduction was largely attributable to increased command attention on safe and spill-free fueling operations.

A second Oil Spill Prevention QMB was chartered in March 1996 to build upon the initial successes of the first QMB. The biggest success came in the form of enhancing traditional refueling/defueling evolution instruction methods for the Guided Missile Destroyer (DDG) ship class with computer-based training (CBT). The CBT contributed to USS Carney's (DDG-64) record of no oil spills since its commissioning in April 1996 and additional efforts to adapt the training for the Guided Missile Frigate (FFG), Cruiser (CG) and Destroyer (DD) ship classes.

For more information on the Oil Spill Prevention QMB, contact Jan Bovier at (904) 270-6730 (DSN 960) or jbovier@nsmayport.spear.navy.mil.

A Tiny Solution Offers Big Savings

Navy Environmental Leadership Program (NELP) hosted a demonstration of a microbe that removes petroleum from wastewater at Naval Station (NS) Mayport.



*Microbe
Illustration*

Onboard a ship in the Mayport basin, a JP-5 line failure caused contamination of a domestic sewage wastewater holding tank. The challenge arose from the need to dispose of the contaminated wastewater that was offloaded to in a 20,000-gallon pierside holding tank. NS Mayport NELP Coordinator Ursula Shaw suggested investigating the use of a commercially-marketed microbe to treat the contaminated water in place, potentially avoiding the cost (in this case more than \$5,000) of disposing of the wastewater at an off-base industrial wastewater treatment plant. When contacted, the microbe manufacturer offered to clean up the contamination in the tank, at no cost the government, for the opportunity to test their technology.

The vendor claimed that the microbes consume hydrocarbons, petroleum, and aqueous film forming foam (AFFF), breaking them down into benign products. After the microbes are added to the water, aeration is required for the digestion of the contaminants.

Initial tests showed that the water was contaminated with hydrocarbons at a level of 3400 milligrams per liter (mg/L). Two weeks after the microbes were added, the levels had dropped to 100 mg/L. Although still above the permitted limits of 5 mg/L at the domestic wastewater treatment plant, the contamination had clearly been reduced significantly.

"The results of the demonstration showed promise and warrant further testing," said Trent Bohman, NELP AFFF/Oily Waste Quality Management Board team leader. "There are some concerns that still need to be addressed about holding times, areas of application, and controlled testing environments, but overall this was a good initial test."

NELP plans to conduct further evaluation of the microbes in the future.

For more information about the demonstration, please contact Trent Bohman at (904) 542-4553 (x8329)(DSN942) or bohmanrt@pwcjax.navy.mil.

For questions or comments, visit the NELP website at <http://nelp.navy.mil> or contact Ursula Shaw (NS Mayport NELP Coordinator) by phone at (904) 270-6730 (DSN 960) or e-mail at ushaw@nsmayport.spear.navy.mil or Mike Magee (Navy Region Southwest NELP Coordinator) by phone at (619) 524-6357 or e-mail at Magee.Mike.H@asw.cnrsn.navy.mil.



<http://nelp.navy.mil>

